

NEW PRODUCTS

New Products Editor:
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DMA controller links DEC's Unibus to Versabus

Uni/vers, a Unibus-to-Versabus direct connection offered by Associated Computer Consultants, is designed to enhance DEC products.

The Uni/vers design is based on discrete logic implementations of registers, counters, and asynchronous control elements. Thus, according to the company, it can direct any high-speed memory-to-memory transfers within either a Unibus or a Versabus, and transfers involve speeds much faster than those with programmed DMA. This feature is especially important for the multiprocessor, multitasking potential of the Versabus.

The Uni/vers is a two-board set joined by two cable assemblies. On the Unibus side, the cable assemblies connect to a circuit board that occupies one SPC slot of the Unibus in the backplane. On the Versabus side, the cable assemblies connect to a 9×14-in. standard Versabus board occupying one slot of the Versabus backplane. Base address assignments and range boundaries are user-defined by DIP switches on both boards.

Because the 16M-byte Versabus address space is very large compared with that of the Unibus (256K bytes), the DEC Unibus memory appears to be part of the Versabus memory from the Versabus processor's point of view. The Uni/vers maps all 256K memory locations onto the Versabus. In transparent-mode DMA, there is no need for either system's CPU to set up physical address pointers.

There are four DMA possibilities: Versabus to Unibus, Unibus to Versabus, Versabus to Versabus, and Unibus to Unibus. The active CPU initializes the address and count registers and then sets the GO bit to begin the DMA transfer process. As the block transfer progresses, the address sequence is monitored. If the address lies within the range of Unibus addresses, a request for Unibus cycle passes to the Unibus board. Then, a state machine controls the Unibus protocol as soon as a bus grant is issued.

The Uni/vers sells for \$5000 in single quantities with OEM discounts available.

Reader Service Number 31

CPU board features memory and I/O expandability

A high-performance 16-bit CPU whose memory and I/O capabilities can be expanded through small, plug-in modules has been announced by Texas Instruments. Designed for high-precision, computation-intensive applications, the TM990/103, maintains complete software compatibility with all TI TM990 series of microcomputer modules.

The TMS990/103 uses a TMS99110 processor to provide the module with Macrostore memory. Macrostore is a memory space for frequently used functions or algorithms that can be accessed at a processor speed of 167 ns at 6 MHz. The 1K byte of Macrostore ROM is located on a chip in the processor and is programmed with single-precision, floating-point instructions. Additional Macrostore functions can be developed via the processor's standard and prototyping mode and then stored in on-board PROMs.

The TM990/103 allows on-board expansion of I/O via two IEEE P959 (ISBX) bus-compatible sockets. Up to two TI customizer modules, or other industry-standard IEEE P959 modules, can be plugged into the sockets for incremental expansion of the TM990/103's capabilities. The I/O capabilities of the CPU module can be expanded to include speech synthesis, color graphics, floppy/disk control, or EPROM programming. A double-wide prototyping module can also be plugged into the IEEE P959 bus connector and allow users to develop their own customizer modules.

The TM990/103 costs \$1660 or \$1830, depending on the configuration.

Reader Service Number 32



The 4100 family from Tektronix includes the 4105 computer display terminal, priced at \$3995, and the 4107, priced at \$6950. Both feature a 13-in. color raster-scan display. In addition, the 4109 computer display terminal, priced at \$9950, has a 19-in. display. The 4695 color graphics copier, which uses on-demand ink-jet technology, is priced at \$1950 and is compatible with the 4100 family of terminals.

Reader Service Number 33

Access security system connects with dial-up data lines

Digital Pathways has introduced Defender, a computer access security system to solve the problem of access security over dial-up data lines.

Defender allows traditional computer log-on procedures but also provides two additional protection schemes by functioning as an authorization point through which each user must receive clearance prior to accessing the computer. The system can be added to any host computer without software or hardware modifications and can address up to 59 users simultaneously at speeds up to 9600 bps.

The user calls Defender on any standard Touch-tone telephone. A digitized voice response asks him to enter an ID code number by using the telephone's numeric keypad. The ID code number acts as the access key to the computer, determines the user's speed class and priority, and matches the code with a corresponding phone number.

After receiving the ID number, Defender checks its validity and instructs the caller to either hang up or reenter the ID number. If after three attempts (or 30 seconds) the number has not been successfully entered, Defender automatically disconnects and sends an alarm message to its printer.

Following a successful ID transaction, Defender tells the user to hang up, determines his speed class and priority, and retrieves from its memory the user's authorized telephone number. Defender's automatic dialer (Racal-Vadic's multiline automatic calling system) then calls the user back at the authorized number and transfers control of the phone line to its central modem. Even if the confidentiality of the ID number is compromised, the unauthorized user must be physically located at the authorized user's telephone.

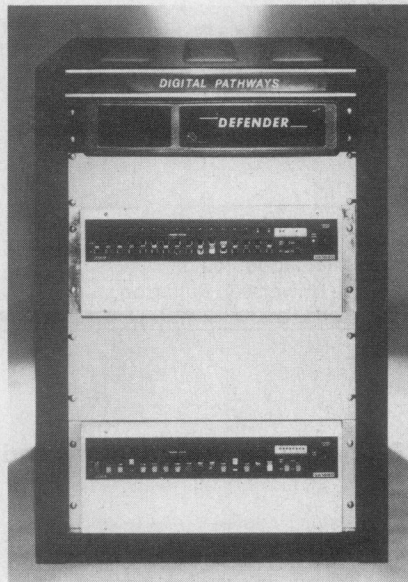
Software aids typeface design task

Designing customized typefaces for dot matrix printers can now be done by "following the dots" with Okidata Corporation's Personal Touch software program. Personal Touch is available for the Apple II+ and Apple IIe computers and the Okidata Microline 92, 93, and 84 Step 2 printers.

The software allows users to form new characters by creating dot matrix patterns. When the diskette is inserted into the computer, concise instructions appear on the screen. A large diagram guides the user through dot placement with keyboard commands, while another display shows how the formatted characters will look when they are printed. The new characters can be stored on the diskette and downline loaded into memory for printing.

Greek, superscript/subscript, math, ASCII, and italic character sets are included as part of the program. Manufacturer's list price for Personal Touch is \$89.

Reader Service Number 34



Defender from Digital Pathways is designed to provide access security over dial-up data lines and can handle up to 59 users simultaneously.

Because calls are now handled on an outgoing rather than incoming basis, the access system permits companies to monitor computer use—as well as telephone charges—more closely. Each transaction is dated and time stamped, and the printer supplies hard-copy output.

Configured for 14 outgoing lines, Defender is priced at \$14,975, with delivery in 60 days ARO. Modems are also available.

Reader Service Number 35

Programmer workstation has customized digital control board

Valley Data Sciences has introduced the IQ150 as part of a family of intelligent memory programmer workstations. The IQ150, or "smart socket," was produced by integrating a CP/M-based personal computer with a customized digital control board and floppy disk software. The workstation permits the programming of any semiconductor manufacturer's PROMs, EPROMs, or EEPROMs, from 4-bit bipolar PROMs to the NMOS 27256 32K-byte EPROM, without the need for any personality modules or hardware/firmware additions, according to VDS.

By using DACs in the control board and putting the device characteristics into the software database, the IQ150 automatically configures the test-socket pins and puts the correct signals for data, address, control, and programming voltage on the appropriate device pins.

The IQ150 full turnkey system is priced at \$6950, or \$4950 without personal computer.

Reader Service Number 36

Line printers for IBM systems have speeds up to 1440 lpm

General Business Technology has announced the availability of a family of high-speed line printers for twin-axial connection to IBM S/34 and S/38 computers.

The 3200LP series includes models with speeds of 360, 720, 1130, and 1440 lines per minute. All models are based on the CDC/Centronics E-series band printers, which share operating features such as a swing-open gate for paper loading, interchangeable print bands for font changes, and a towel ribbon rated for two million lines of print.

All models print up to 132 characters per line at 10 cpi, with operator-selectable line spacing of six or eight lpi. The 360- and 720-lpm models also permit full-character, 198-column printing at 15 cpi.

The operator can change print bands in one minute, according to the company, and select 48, 64, or 96 character bands with 10 or 15 pitch. The printer automatically adjusts to the character set without operator intervention. A power paper stacker is included on the 1440-lpm model and is optional on other models.

The 1440-lpm printer costs \$25,000, and maintenance is \$223 a month. The 720-lpm model costs \$13,600.

Reader Service Number 37

Business system is compatible with IBM PC

Eagle Computer has introduced the Eagle 1600 series, a 16-bit, Intel 8086-based line of IBM PC-compatible microcomputers. According to Eagle, the 1600 series combines all of the features of the IBM PC with up to four times the operating speed.

The 1600 is an upgradable system with multiple hardware and software options. The system features 128K bytes of RAM, 780K bytes of disk storage on a 5¼-in. floppy disk drive, and 10M bytes on a hard disk drive, for a combined capacity of 6000 pages of double-spaced text. The internal memory is expandable to 512K bytes, and up to eight IBM PC plug-compatible boards can be installed for optional peripherals such as printers, telecommunications devices, and color monitors.

The detachable keyboard has reserved 24 of the 105 keys for user-definable functions.

Users can select software that includes programs designed for the IBM PC, word processing and financial planning packages, and an operating system. Additional software includes general accounting, medical and dental practice management, and CPA accounting.

Networking options are also available. The 1600 can be linked with up to 64 Eagle eight- or 16-bit microcomputers.

With floppy and hard disk storage, processor, monitor and keyboard, word processing and financial planning software, and operating system, the 1600 series starts at \$4495.

Reader Service Number 38

Office workstation is Burroughs compatible

Microwest Terminal Systems, is offering the MTS 183, a Burroughs-compatible CP/M-based, personal workstation for office environments. The basic system consists of a terminal, a CP/M-based computer with dual minidiskette drives, a range of application and utility programs with software documentation, and all cables and other peripherals required to make the system operational.

The standard MTS 183 software includes CP/M version 2.2, Wordstar, Logicalc, Correct-it, Pilot, Personal Pearl database manager, and two versions of Basic. Also provided with each system is Util-M, which transfers files between the MTS 183 and its host system. Additional commercially available CP/M programs can also be used in the MTS 183.

The workstation also features programmable function keys, an addressable printer port that will accept most printers (letter quality to fast dot matrix), built-in daisy chaining, and a selectable TDI interface.

The MTS 183 is priced at \$3995 in single quantities.

Reader Service Number 39



The MTS 183 from Microwest Terminal Systems can function as a word processor, financial planning tool, local data entry station, or program development station.

Data encryption unit secures local area network data

The Z01 encrypted packet communications unit from Sytek is designed to allow local area network managers to make sure their networks are secure from eavesdropping or data tampering and configure secure subnetworks on the same network. The Z01, an option to Sytek's Localnet model 20/100 broadband local area network, encrypts data between any two secure packet communications units while the data are transmitted on the network.

The unit is designed for users in electronics, the military, education, and medicine. A single user can simultaneously maintain multiple standard or encrypted sessions from a secure device.

The Z01 is used with Sytek's key distribution center of the Localnet 50/100 network

control center. The KDC provides discrete encryption keys for each session and recognizes the security code of each packet communications unit before it initiates an encrypted session. All data encryption functions are transparent to the user.

Secure packet communications units adhere to the federal Data Encryption Standard of the Department of Defense and are compatible with standard Localnet 20/100 packet communications units.

Sytek's Z01 option to the Localnet model 20/100 broadband local area network is priced at \$500; the Localnet 20/100 itself costs \$1090.

Reader Service Number 40

Software translates English commands into code for PCs

A software program called Codewriter from Dynatech Microsoftware allows business people using popular desktop computers to design their own application programs without a knowledge of computer programming. According to the company, Codewriter writes all the code automatically.

Users needing a computer application for day-to-day business tasks can write a program by typing the screen layout form and the calculations onto the computer's screen in plain English. Codewriter translates these instructions and writes the computer language code that will do the work in the computer.

Once the user's application is produced, Codewriter itself is put aside and the new ap-

plication program is used. When a new application program is needed, the Codewriter disk is employed again to write it. The program can also modify programs that it originally generated.

Applications that can be developed include payables and receivables, sales analysis, customer and personnel files, mailing lists, invoicing, inventory and production tracking, and order entry.

Codewriter is available for the Apple II+, the Apple IIe, the IBM PC, Commodore's 8000 series, and Victor's 9000 series at \$399. It is available for the Commodore 64 at \$99.

Reader Service Number 41

Management tools build custom electronic worksheets

Microsoft Corporation has announced Multi-Tool, two software management packages used to design and build customized Multiplan electronic worksheets. Both systems are available for PCs such as IBM, Texas Instruments, Wang, Zenith, and Apple II and IIe.

Each software package consists of program disks, a user manual, and a case study folder. The disks contain a demonstration program on how to use the Multi-Tool expert system, programs to prompt the user for information for building the Multiplan worksheets, and sample cases that are interactive case studies to help the user understand how a hypothetical company would develop the worksheets.

The Multi-Tool expert systems can be applied in a variety of businesses. The budget system, for example, assists retailers or manufacturers who require an operating budget planning and control system. The financial statement system can be used by business managers and people in the financial service industries.

Users can select time periods, intervals, or a number of categories and subcategories to analyze, assigning names appropriate to their particular business environment. They can enter data directly or copy the information from a related worksheet.

Multi-Tool's budget system costs \$150; the financial statement system is \$100.

Reader Service Number 42

Multiplexer operates over T-1 digital lines

The Ultramux from Avanti Communications is a 10M-bps time-division multiplexer that can mix voice, data, and video transmissions over high-speed digital circuits. It is designed for high-speed, point-to-point communications within or among operating divisions of companies in industries such as finance, manufacturing, and distribution.

The system operates over 1.544M-bps T-1 digital lines and can split signals into 128 lower speed communications channels. The bandwidth is up to 10M-bps.

The Ultramux can accommodate combinations of standard and nonstandard data rates. It features channel-broadcast, channel-routing, and reconfiguration capabilities, plus centralized diagnostics control.

The Ultramux can be monitored and diagnosed from anywhere in the network or, via a dial-up port, from any terminal with communications capabilities, according to Avanti. This permits any operator to monitor and diagnose each Ultramux in the network. Both interruptive and noninterruptive diagnostic testing can be performed on individual and aggregate channels, with faults diagnosed to the functional and/or component level.

Available for rack mounting or in a stand-alone cabinet, a 16-channel system costs \$16,000. A 64-channel system costs \$42,000.

Reader Service Number 43

Office systems are compatible with IBM and Wang WPs

Harris Corporation has introduced the 9000 family of integrated word processing and data processing office systems. Connectivity with other Harris equipment, communications with mainframe computers, and compatibility with Wang and IBM word processors are features of the family.

The 9000 series is available in a variety of configurations: the 9010 stand-alone word processor, the 9015 professional computer, the 9020 minicluster, the 9050 cluster, the 9060 dual cluster, and the 9070 network systems.

The 9000 series features multiple 16-bit microprocessors and a multitasking distributed operating system with integral network support features. All workstations in the family are designed to be multifunctional and capable of serving as word processors, yet they incorporate the communications and networking capability (2780/3780, 3270/SNA) to perform as remote information processing workstations. A baseband bus local area network permits the interconnection of up to 32 network-attached devices.

In addition to integrating word processing and communications capabilities, each workstation in the series can also serve as a professional computer with the CP/M-86 or MS-DOS and applications software.

An integrated design of identical hardware, memory, and software components for com-



The entry-level member of the Harris 9000 series, the 9010 stand-alone word processor, is a 16-bit microprocessor-based display/key-board terminal that supports up to 1M byte of memory.

patibility throughout the line allows users to move from stand-alone to larger configurations.

Prices in the 9000 series are from \$9500 for a stand-alone system with printer to \$84,000 for a typical cluster consisting of eight workstations and four printers.

Reader Service Number 44

Inventory control software runs on S/10 microcomputer

MAI/Basic Four is packaging inventory control software to run on the Basic Four S/10 microcomputer. The menu-driven, user-installable software is tailored for the first-time computer user who requires documentation that is as easy to use as possible to minimize training and dealer support time.

The inventory control software runs under the Business Basic/Micro operating system and is integrated with the Basic Four general ledger software to minimize redundant entries. Users can maintain inventory items and perform inventory transactions, including receipts, adjustments, and transfers. They can also change one parameter to use LIFO, FIFO, replacement cost, or the average cost inventory control method. The software can print physical inventory sheets by location, then make the necessary adjustments after the physical inventory is taken.

A reorder report can be generated to show all items below the reorder point and to help compute economic order levels. Monthly inventory transaction audit reports can show all inventory movements by item, and all reports can be printed or viewed on the display screen in 132-column mode.

The MAI/Basic Four inventory control software is priced at \$695.

Reader Service Number 45

Sonic digitizer has L-frame microphone array capability

Science Accessories Corporation has announced the GP-8 sonic digitizer. The GP-8 mates SAC's technology and packaging developed for the GP-7 Grafbar digitizer with the capability of the L-frame microphone array used with the GP-3 and GP-6 digitizers.

The GP-8 sonic digitizer allows the conversion of graphic information into numerical or digital form for input into data processing, recording, or transmission equipment. A control unit initiates energy pulses, which are converted into sonic waves by a hand-held stylus

or cursor. The system measures the times required for the sonic energy to reach the x and y sensors in the microphone assembly and converts these times into distance measurements in digital form. An optional 16-digit display provides a visual indication of coordinate readings where required.

The free-standing, L-frame microphone sensor assembly allows interaction with a variety of images, such as CRT and plasma displays, projected images from X rays and films, maps or drawings on drafting tables, and graphic systems for CAE/CAD/CAM. The active work area ranges from 14 x 14 in. to 60 x 70 in.

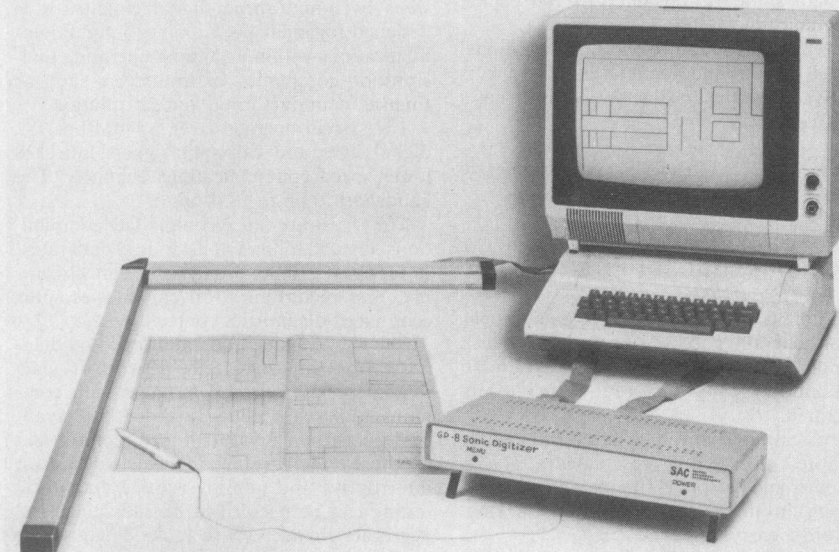
The GP-8 features an 8-bit microprocessor that permits the system to perform five standard program functions via menu entry, including origin, line, metric, stream, and cancel. The five-function menu can be located anywhere in the active area, and the menu can be erased by dip-switch control. Two-way communication, permitting remote computer control of all digitizing functions, is offered, as is remote trigger capability.

Either a stylus, a cursor with cross-hairs, or both can be used with the GP-8 to take data and to make menu selections.

Basic GP-8 specifications include a resolution of 0.01 (option to 0.005); a digitizing rate of 50 points per second; and an RS-232, BCD parallel, or binary parallel output with switch-selectable baud rates to 19,200.

The sonic digitizer costs from \$1660 to \$2450, depending on the size of the active area required.

Reader Service Number 46



The Model GP-8 sonic digitizer from Science Accessories combines the microprocessor-based GP-7 Grafbar digitizer with the company's L-frame microphone assembly. The system allows conversion of graphic information into numerical or digital form and is applicable to tasks from map making to CAE/CAD/CAM.

Cassette backup for IBM PC-XT has two modes

Sysgen has announced a streaming cassette tape backup for IBM's XT (hard-disk) version of the PC. The Sysgen Image backup subsystem includes controller, drive electronics, and tape drive. It is software compatible with either PC-DOS or CP/M-86, which are both available on the IBM PC. Under software control, the Image will perform complete archival backup of information on a hard disk at up to 2.5M bytes per minute. Storage capacity of the streaming tape cassette is 20M bytes.

The Image offers a choice of two backup modes. "Preserve" backs up data from an individual disk volume and restores the data on an individual disk volume in an image fashion. An additional catalog utility scans the entire streaming tape to list all files by tape-file identification, size, and other categories. "Filesave" allows individual files or groups of files to be saved from the hard disk to the streaming tape or vice versa. The catalog utility gives the choice of seeing all file sets on the tape, a specific range of file sets, or a particular file set.

The price for the Image streaming cassette backup system is \$995, which includes an IBM interface card, cables, software, and all required components.

Reader Service Number 47

Chromatography data system uses distributed processing

Nelson Analytical is offering a chromatography data system that uses distributed processing to increase laboratory productivity. The Model 4416 multi-instrument data system is based on the 16-bit Hewlett-Packard 200 Series Model 16 desktop computer with 524K RAM and includes CRT, dual microfloppy disk drive, printer/plotter, chromatography software, and instrument interface.

Each intelligent interface provides the analog-to-digital conversion and contains active RAM to buffer and store the data from the chromatograph. Under software control, a segmentation of memory in the interface is provided so that multiple chromatograms can be digitized and stored in the interface, leaving the data system free to perform other tasks.

Additional software packages provide further applications for the Model 4416 in the biomedical laboratory. Packages for gel permeation chromatography, simulated distillation, peak summary tables, and batch reprocessing are available. In addition, a series of data communications packages for transferring chromatography data files from the Model 4416 to host computers such as the HP 1000, HP 3000, and DEC computers is available.

The Model 4416 sells for \$13,200.

Reader Service Number 48

CAD system is designed for team projects

An engineering design and project management system for large, team-oriented design projects has been introduced by Cadtec.

The Series 8000 design system is a hardware/software system that integrates Cadtec's Model 8200 interactive graphics workstation, its Model 8500 graphics office station, and extensive system software and application tools with a DEC VAX-11 host computer.

The 68000-based Model 8200 intelligent workstation provides 1024 × 1024 resolution and has a color or monochrome 19-in. CRT, a 68000 dedicated applications processor, and three high-speed 2900 processors to control disk I/O, host I/O, and to manage bit-map graphics.

The Model 8500 office station has a 640 × 408-resolution, 13-in. color CRT with four color planes and communicates with the

host over standard RS-232 communication lines. Since applications programs can run in the host or the workstation, the Model 8500 gives each engineer and the project manager direct access to all project data, with the same tools, user interface, and design environment available on the workstation.

A typical installation of the Cadtec Series 8000 design system to support 10 engineers averages under \$50,000 per user. Components include Model 8500 color graphics office stations for each team member, Model 8200 graphics workstations, and the Cord data system; the data system includes the project database system, View user interface, and all system software.

Reader Service Number 49

SPERRY RESEARCH OPPORTUNITIES

Sperry Research Center is the corporate research center of Sperry Corporation. It is located in the beautiful countryside of Boston's western suburbs. Our multi-disciplinary research staff includes computer scientists, mathematicians, electrical engineers, physicists, and chemists. Here is a stimulating, creative and purposeful atmosphere with ample opportunity to maintain your professional reputation through long-term leading edge programs, publication, and conference participation. We develop new technology applicable to SPERRY products, verify design tradeoffs through analysis, simulation or experimentation, and consult with advanced product development groups in the operating units on putting our ideas into practice.

Artificial Intelligence Expert

We are seeking a dedicated professional to join our team carrying out applied research projects in applications of Artificial Intelligence to Command and Control Systems. You will develop decision-aiding software for military command and control applications and be responsible for project planning and execution, including development of functional requirements; and converting into effective LISP code. MS or PhD and 2 plus years relevant experience required.

Computer Scientist Information Systems

We are seeking a scientist who will be expected to perform innovative applied research in one or more of the areas of database systems, distributed systems, and office systems. Desired previous experience includes background in those areas of interest and/or programming languages and operating systems. Some design and/or implementation experience is also desirable. PhD in Computer Science or equivalent required.

We offer competitive salary and full benefit package. Send resume to: Toni Williams, Sperry Research Center, 100 North Road, Sudbury, MA 01776. U.S. Citizenship required.

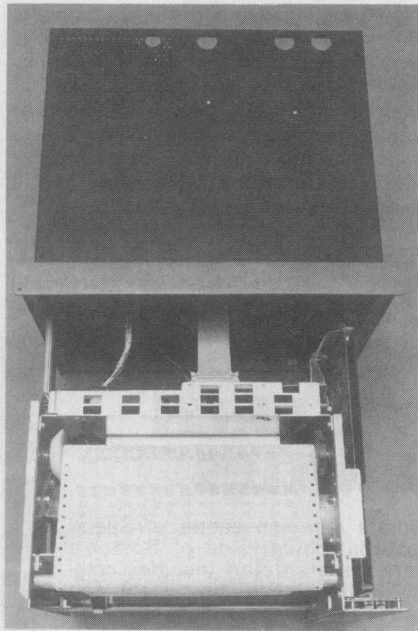


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Digital recorder handles harsh environments

Honeywell is offering a digital recorder that combines analog process recording with the speed and alphanumeric reporting flexibility of a dot matrix computer printer.

The DPR 1500 digital process reporter, a high-speed, multichannel microprocessor-



The DPR 1500 reporter from Honeywell is housed in a 311-mm (12.25-in.) by 482-mm (19-in.) metal case that can be rack or panel mounted. Power, input, and output wiring connects to numbered terminal blocks at the rear of the unit.

based instrument package, features 14 to 30 analog channels with built-in signal conditioning that allows the instrument to monitor process variables from 17 sensor types. Digital displays show channel number, process variable value, and engineering units, and provide operator prompts.

The DPR 1500 can print in one color on pressure-sensitive paper pressed against an anvil, or in six colors with an ink-filled color wheel. The dot matrix printhead has a speed of 170 cps. Use of a dot-fill technique from a microprocessor algorithm allows the trend record to be printed in a continuous line. Printing occurs in both directions of printhead travel, and the printing frequency is determined by a preselected chart speed or log interval. The unit uses a universal, 100-division, plain or pressure-sensitive, 10-in. paper chart that is perforated to fold and store as 8½×11-in. sheets.

Users can alter the DPR 1500 microprocessor instructions to fit specific requirements by entering configuration data through a front-panel membrane keyboard. A user-selected security code ensures that the data are tamper resistant. Configuration data are stored in a nonvolatile memory. An independent, real-time digital clock—powered by a 10-year-life battery assures that time and date printing are accurate.

Self-diagnostic tests can be made during power-up and on demand, and the field terminals and power-line terminals meet the IEEE surge withstanding capability test. Honeywell offers six basic models of the recorder priced from \$4800 to \$5600, depending on color and channel needs.

Reader Service Number 51

Portable test set troubleshoots data link installation

The HP 4935S, a portable data transmission set from Hewlett-Packard, makes the essential measurements required to troubleshoot and verify proper installation of most data links, including wide-band circuits up to 72 K bps, and indicates results by dual LED readout.

Carriers, computer and communications equipment manufacturers, and EDP/data communication centers can use the test set to evaluate overall data throughput and make analog-impairment measurements on the transmission facility.

Major components of the test set are the HP 4935A transmission-impairment measuring set and the HP 4925A bit-error-rate test set. The HP 4935A TIMS performs loss, gain slope, noise, signal-to-noise, noise-with-tone, three-level impulse noise, four-wire return loss, and noise-to-ground or peak-to-average ratio tests. The 20-Hz to 110-kHz frequency range and 50K-bps filter make the TIMS suitable for dataphone digital service testing.

With the HP 4925A, data throughput is evaluated by simultaneous measurement of bit-error rate, block-error rate, errored seconds, and percentage of error-free seconds on asynchronous and synchronous networks. Character framing on four levels and parity selection allow these tests to be performed on character-oriented systems. Tests can be performed on both low- and high-speed data links.

The HP 4935S data transmission set is priced at \$5315, and delivery is six weeks ARO. The HP 4925A can be ordered as a stand-alone product for \$1765. Delivery on the HP 4925A is four weeks ARO.

Reader Service Number 52

Portable teleprinter offers battery-powered operation

Texas Instruments is offering an AC- or battery-powered, six-pound teleprinter that fits into half a standard-size briefcase.

As part of a portable office, the Model 707 can be used by a salesperson to enter orders or generate quotes, or by a real estate agent who is searching a multiple listing service. The Model 707 can also be used to access commercial databases such as the Dow Jones news retrieval service, or it can be used as part of an electronic mail system like Telemail.

Information can be typed on a full-size, typewriter-like keyboard and sent directly to a host computer over standard telephone lines. The terminal receives and produces a hard-copy, computer-generated response in formats of 80 to 132 columns to a line.

Database access is provided by plugging the Model 707 into a modular telephone jack, thus eliminating the need for an acoustic coupler. If a user must be at a telephone that does not have a modular jack, as in a telephone booth or hotel room, he can choose to add the optional acoustic coupler.

The Model 707 has a suggested retail price of \$695.

Reader Service Number 50



The Model 707 by Texas Instruments is a full-function portable teleprinter that offers battery-powered operation. Database access is provided by plugging the Model 707 directly into a modular telephone jack, eliminating the need for an acoustic coupler in most circumstances.

Calcstar spreadsheet offered for IBM PC

Calcstar 1.4, an electronic spreadsheet and financial planning software package from Micropro International, is now available to run on the IBM personal computer. The Calcstar format implements the dual-function keys on the IBM PC's numeric keypad to offer page scrolling (up/down, right/left), cursor movement, and character deletion. The software uses the IBM PC's memory-mapped video capabilities to speed operator interface times.

Calcstar 1.4 can be used with Wordstar and other Micropro products to produce financial reports from simple arithmetic or logarithmic functions and regression analysis. It has a capacity of more than 1300 cells for worksheet entries and employs conditional logic to enable users to control the content of individual cells.

The suggested retail price for Calcstar 1.4 is \$145.

Reader Service Number 53

Lisp software available for Cromemco computers

Cromemco has employed Lisp as an artificial intelligence programming language for use on its family of eight-, 16-, and 32-bit computer systems. Cromemco's Lisp is designed for use in systems that understand natural language, systems for symbolic manipulation of mathematical expressions, intelligent controllers, robotics, computer-aided design, and design automation.

Cromemco's Lisp has virtual storage capability that allows infrequently used functions and symbols to be stored on disk, making larger user programs possible. Another feature of the software is a table-driven, user-modifiable parser that allows the programmer to redefine the scanner and define a new Lisp syntax.

Cromemco's Lisp is available with full documentation in either a 5 $\frac{1}{4}$ -inch or eight-inch diskette format for \$595 and can be used on any System One, System Two, or System Three computer. Configurations are priced from \$3995 to \$12,495.

Reader Service Number 54

DBMS runs on Iris-based computers

DS/R is an integrated end-user-oriented database retrieval, reporting, and management system from Computer Technology Systems that can be used to create, maintain, search, select, sort, and list a user-created database.

DS/R runs on computers that use the Iris operating system and have 64K bytes or more of memory. The menu-driven DS/R can be used in applications from inventory control and cost analysis to telephone/mailings direc-

Sales invoicing software offered for Apple and IBM PCs

A sales invoicing software system from State of the Art, Inc., expands the capabilities of accounts receivable, or is integrated with inventory control and the general ledger system of small business microcomputers.

The sales invoicing module, when integrated with State of the Art's accounts receivable module, produces invoices directly from shipping documents and automatically generates back orders and sales journals. The module also includes an extensive reporting system to track sales, analyzes gross profits (by invoice, customer, or salesperson), and monitors salesperson commissions.

When linked to the general ledger, the sales invoicing module provides direct reporting on sales and receivables to the ledger. When integrated with inventory control, it provides automatic inventory adjustments and price updates.

The sales invoicing module is priced at \$395 for Apple II and \$495 for Apple III and IBM PC.

Reader Service Number 55

Relational DBMS is designed for Unix-based micros

North American Technology announced the availability of Unify, a relational database management system designed specifically for Unix-based microcomputer systems. It requires 1.5M bytes of disk storage and 100K bytes of main memory and is available on several versions of Unix.

A variety of database access methods—including pointers, hashing, and B-trees—are used to maximize performance capabilities regardless of file structure. A built-in optimizer automatically evaluates queries and then selects the expression-evaluation sequence, join order, and access method or methods that will provide the fastest response.

Unify provides a choice of user interface components to allow access through a host language or via nonprocedural tools. It also provides a query language based on IBM's Sequel 2 while providing the experienced user with relational access to any information in the database.

The recommended retail price for Unify is \$2995.

Reader Service Number 56



Computer glossary. Reference for nontechnical business managers and home computer users contains over 1000 cross-referenced computer terms. *The Computer Glossary* retails for \$14.95 and is discounted when ordered in bulk from The Computer Language Company, Inc., 140 W. 30th St., New York, NY 10001; (212) 736-8364.

Robotics journal. Japanese-published journal reports on the recent developments in robotics technology. In addition to mechatronics in medicine, automobile production, and energy, the publication discusses the impact of robotics on small-scale manufacturers, labor, the home, and society. *Mechatronics News* is \$1000 a year (10 issues/60 pages each) from Technova, 905 Sixteenth St., NW, Suite 207, Washington, DC 20006; (202) 638-4600.

Forth publication. The Forth Interest Group offers a bimonthly, nonprofit publication intended for micro-, mini-, and mainframe computer consumers who use the Forth language. *The Best of FORTH Dimensions* can be ordered for one year for \$15 (\$27 outside the US) from the Forth Interest Group, PO Box 1105, San Carlos, CA 94070; (415) 962-8653.

Software catalog. This 155-page catalog lists vendors supplying software consumers with Zilog's microprocessors and computers. Individual products are referenced by processor, application, and product name. The *Winter 1982 Software Catalog* sells for \$3 from Zilog, Inc., Technical Publications, 1315 Dell Avenue, Campbell, CA 95008; (408) 370-8000.

For Kaypro PC users. This free magazine is intended for both novice and expert Kaypro II and 10 computer owners. *Pro = Files* includes a full range of departments and features on general computer industry topics as well as Kaypro-related topics. For further information, write to Kaypro Division, Non-Linear Systems, Inc., 533 Stevens Avenue, Solana Beach, CA 92075; (619) 481-3424.

Commodore VIC-20 programs. *VIC Graphics* displays 38 graphics programs in VIC Basic and explains the theory of high-resolution graphics plotting. Programs in this book require the use of the VIC Super-Expander cartridge. Priced at \$12.95, the book is published by Hayden Book Company, Inc., 50 Essex St., Rochelle Park, NJ 07662; (201) 843-0550.

Reader Service Number 57